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**Response to Final Office Action  
Group Art Unit 1765, EXPEDITED PROCEDURE**

FIS9-2000-0099-US1

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:	)	
JOHN H. KELLER ET AL.	)	Examiner: S. Ahmed
Application No.: 09/730,672	)	Group Art Unit: 1765
Filed: December 6, 2000	)	
For: METHOD FOR LIGHTING AN	)	
INDUCTIVELY COUPLED	)	
PLASMA AT LOW PRESSURE	)	June 27, 2003

The Commissioner for Patents  
Mail Stop AF  
P.O. Box 1450  
Alexandria, VA 22313

**RESPONSE TO FINAL OFFICE ACTION  
AND  
PETITION FOR EXTENSION OF TIME**

Sir:

Applicants petition the Commissioner of Patents and Trademarks under 37 C.F.R. § 1.136(a) to extend the time for response to the Office Action dated March 18, 2003 for one month from June 18, 2003 to and including July 18, 2003.

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7/3/03  
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OK to  
encl.  
SA  
7/9/03

09/730,672

The Commissioner is authorized to charge the amount of \$ 110.00 to Deposit Account No. 09-0458 to cover the Extension fee. Any deficiency in or overpayment of this fee should likewise be charged or credited to Deposit Account No. 09-0458.

In response to the Office Action dated March 18, 2003, the applicants respectfully submit the following remarks:

This application has been reviewed in light of the Office Action dated March 18, 2003. Claims 1-7 are now presented for examination. Claim 1 is the only independent claim. Favorable review is respectfully requested.

Claims 1-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nallan et al. (U.S. Pat. No. 6,399,507). Applicants respectfully submit that independent claim 1 is patentable over the art cited by the Examiner, for the following reasons.

The present invention, as defined in claim 1, is directed to a method for lighting an inductive plasma in a plasma processing apparatus having a matching network. It is a feature of the invention that a matching condition is determined under which the matching network is tuned to a capacitive plasma, and the matching network is preset at those conditions.

It is a further salient feature of the invention that a second plasma is lit in accordance with those preset matching conditions and at a desired power. It is noteworthy that the

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desired power includes an excess power; that is, a component of power greater than that required to maintain the plasma as a capacitive plasma. An inductive plasma is then allowed to light due to this excess power.

Accordingly, in the practice of the present invention the second plasma is deliberately lit with a greater power than that used to maintain a capacitive plasma (see specification, page 7, lines 3-12).

Nallan et al. is understood to disclose a procedure for determining process conditions under which a plasma is stable. Nallan et al. teaches (col. 2, lines 55-56) that there are two such process regions, defined by combinations of RF power and gas pressure (col. 3, lines 23-30). One following the teaching of Nallan et al. would be motivated to vary the RF power and pressure until a region of stability was located, and then preset the process conditions accordingly. In particular, one following the teaching of Nallan et al. would not be motivated to first identify stable plasma-lighting conditions, and then use a higher RF power level. Nallan et al. suggests (col. 3, lines 48-51) that at a given pressure, increasing the RF power leads to instability in the plasma. Nallan et al. thus provides no motivation to first determine process conditions for a capacitive plasma, and then start another plasma with excess power.

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Nallan et al. mentions use of a matching network in lighting and operating a plasma (col. 7, lines 32-34). However, Nallan et al. is silent regarding the use of a matching network in determining conditions under which a capacitive plasma may be lit. The procedure of Nallan et al. for locating desirable process regions evidently does not involve tuning the matching network. In particular, Nallan et al. does not suggest that an inductive plasma may be lit by presetting a matching network to conditions for maintaining a capacitive plasma, and then lighting another plasma at a different power. The Examiner states that it would have been obvious to determine a presetting condition of a matching network to tune the network for effectively lighting a plasma. Granted that one wishing to light an inductive plasma (and being skilled in setting matching network conditions) would preset some condition, it would not have been obvious to use conditions known to be effective in maintaining a capacitive plasma. Nallan et al. offers no teaching or suggestion on this point. One following the teaching of Nallan et al., and desiring to start a stable inductive plasma, would be led to set the same matching conditions as observed in a steady-state inductive plasma, with the RF power and pressure determined previously. This is contrary to the present invention, wherein matching network conditions previously determined for a capacitive

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plasma are used to light the plasma, and an inductive plasma subsequently lights due to the excess power.

The applicants respectfully submit that it is clear from the foregoing discussion that the teaching of Nallan et al. provides a method to achieve an objective that is clearly distinct from the applicants' claimed invention.

Furthermore, the applicants submit that Nallan et al. provides no motivation to one of ordinary skill in the art to achieve the applicants' claimed invention. Accordingly, the differences between the applicants' claimed invention and Nallan et al. are such that the applicants' claimed invention would not have been obvious to one of ordinary skill in the art at the time of applicants' invention.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

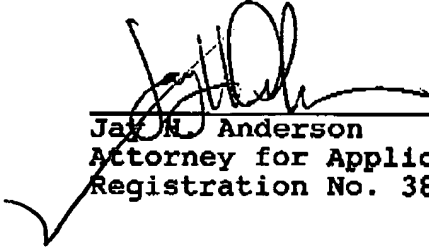
#### CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request favorable consideration and early passage to issue of the present application.

09/730,672

Applicants' undersigned attorney may be reached by telephone at (845) 894-3667. All correspondence should continue to be directed to the below listed address.

Respectfully submitted,

  
\_\_\_\_\_  
Jay M. Anderson  
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DOCUMENT(S) FAXED: (MARKED WITH X)

9 PAGES ATTACHED

Re Applic of	John H. Keller et al.
Docket No.	FIS920000099
Serial No.	09/730,672
Filing Date	12-06-00
Attorney	Jay H. Anderson

Attached: Amendment  
Petition for Extension of Time

## PLEASE DELIVER TO:

EXAMINER: S. Ahmed  
ART UNIT: 1765  
PHONE NO: 703-305-1929  
FAX NO: 703-872-9055-9310

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**Response to Final Office Action  
Group Art Unit 1765, EXPEDITED PROCEDURE**

In re Application of:

Docket No. FIS9-2000-0099-US1

JOHN H. KELLER ET AL.

Application No.: 09/730,672

Examiner: S. Ahmed

Filed: December 6, 2000

Group Art Unit: 1765

For: METHOD FOR LIGHTING AN INDUCTIVELY  
COUPLED PLASMA AT LOW PRESSURE

Date: June 27, 2003

THE COMMISSIONER FOR PATENTS  
Mail Stop AF  
P.O. Box 1450  
Alexandria, VA 22313

Sir:

Transmitted herewith is a Response to Final Office Action in the above-identified application.

☒ No additional fee is required.

The fee has been calculated as shown below

CLAIMS AS AMENDED						
	(2) CLAIMS REMAINING AFTER AMENDMENT		(4) HIGHEST NO. PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	RATE	ADDITIONAL FEE
TOTAL CLAIMS	* 7	MINUS	** 20	= 0	x \$ 9 <sup>o</sup> \$18	0
INDEP. CLAIMS	* 1	MINUS	*** 3	= 0	x \$42 <sup>o</sup> \$84	0
Fee for Multiple Dependent Claims \$140 <sup>o</sup> /\$280						none
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT---						\$ 0.00

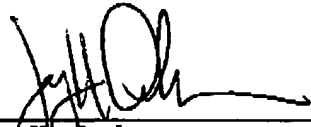
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\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, write "20" in this space.

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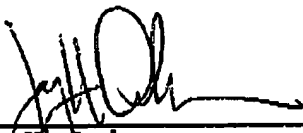


- ☐ \*Verified Statement claiming small entity status is enclosed, if not filed previously.
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- ☒ The Commissioner is authorized to charge the amount of \$ 110.00 to Deposit Account No. 09-0458 to cover the Extension fee for response within one month.
- ☐ The Commissioner is authorized to charge the amount of \$\_\_\_\_\_ to Deposit Account No. 09-0458 to cover the Information Disclosure Statement fee under 37 C.F.R. 1.17(p).
- ☒ Applicants' undersigned attorney may be reached by telephone at (845) 894-3667. All correspondence should continue to be directed to the below listed address.

  
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